BANGALORE WATER SUPPLY
AND SEWRAGE BOARD
CAUVERY BHAVAN, KEMPEGOWDA ROAD
BANGALORE - 560 009

Telephone: 91-80-22945106 Fax: 91-80-22945106

Through E-Procurement

TENDER FOR THE WORK OF

DESIGN, CONSTRUCTION, AND COMMISSIONING **OF 60 MLD STP BASED ON A2O WITH BNR, TERTIARY TREATMENT, POWER GENERATION & ODOUR CONTROL UNITS AT BELLANDUR** INCLUDING 7 YEARS OF OPERATION & MAINTENANCE. (TURNKEY CONTRACT) – **2nd Call**

VOLUME 3 of 4

(DRAWINGS)

FEBRUARY – 2025

Office of the *Chief Engineer (UWP)*
BANGALORE WATER SUPPLY & SEWERAGE BOARD
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Bangalore -560 009
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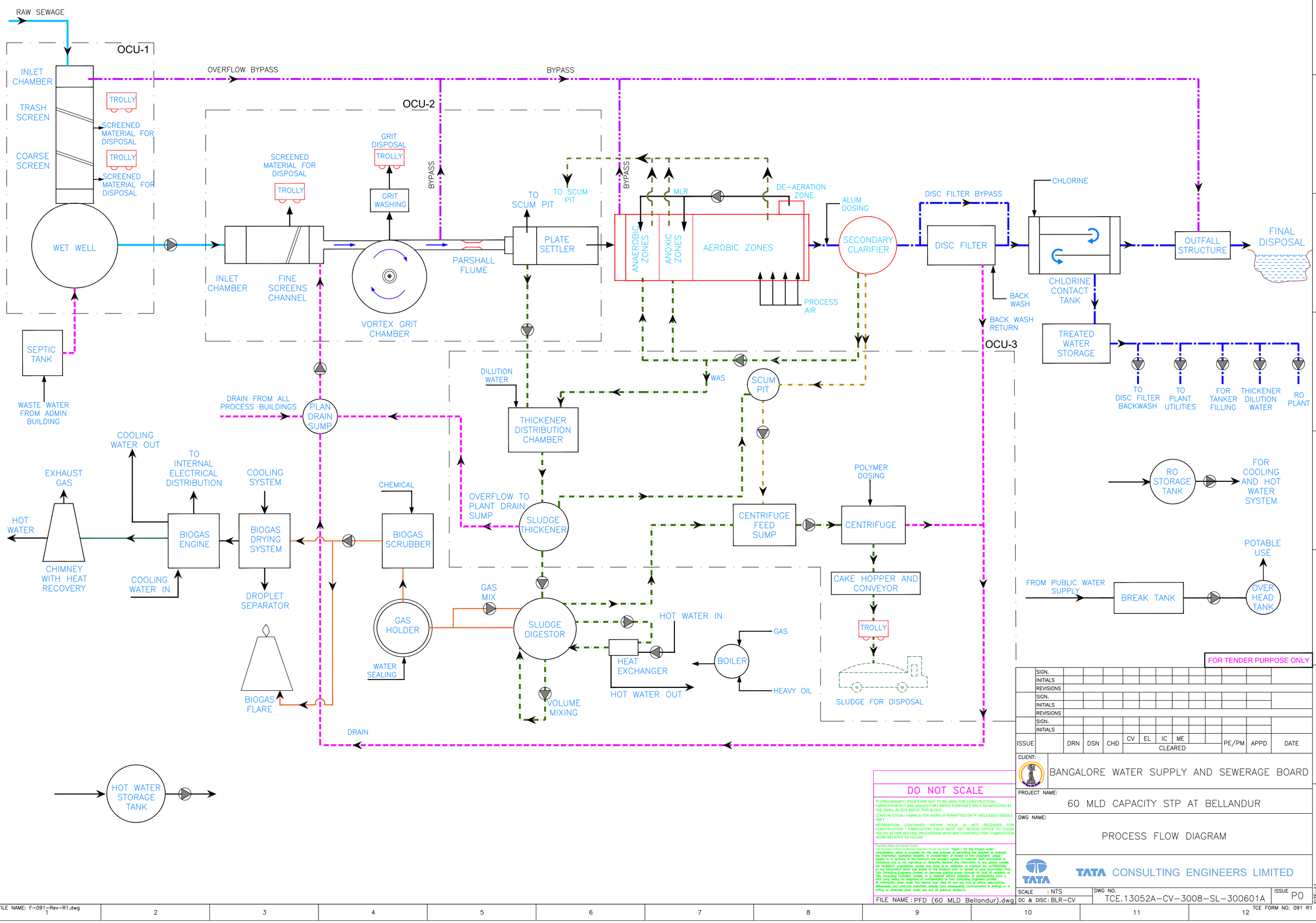
8	Single Line Diagram for the Electrical Works at 60 MLD Capacity STP, Bellandur	TCE.13052A-EL-4000-AU-40066	P0

TITLE: PROCESS FLOW DIAGRAM

DWG NO: TCE.13052A-CV-3008-SL-300601A



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	INITIALS											
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	SIGN.											
	INITIALS											
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	CLEARED	PE/PM	APPD	DATE

CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 60 MLD CAPACITY STP AT BELLANDUR

DWG NAME: PROCESS FLOW DIAGRAM

TATA CONSULTING ENGINEERS LIMITED

SCALE : NTS | DWG NO. TCE.13052A-CV-3008-SL-300601A | ISSUE P0

DC & DISC : BLR-CV

SIZE-A1

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FILE NAME : PFD (60 MLD Bellandur).dwg

FILE NAME: F-091-Rev-R1.dwg

TCE FORM NO. 091 R1

TITLE: OVERALL PLANT LAYOUT WITH CONTOUR

DWG NO TCE.13052A-CV-3008-SL-30602

BELLANDUR TSPS COMPONENT LIST

SI NO.	COMPONENT NAME	NO. OF UNITS	SIZE IN METERS				
	TERMINAL SEWAGE PUMPING STATION (TSPS)		L	W	LD*/H	DIA	Free board (m)
01	TSPS INLET CHAMBER	1	3.70	7.40	1.20	–	0.75m Above FGL
02	TRASH SCREEN & COARSE SCREEN CHANNEL	4	10.00	1.40	1.00	–	0.75m Above FGL
03	COARSE SCREEN EFFLUENT CHANNEL	1	1.50	7.40	0.90	–	0.75m Above FGL
04	WET WELL	1	–	–	2.50	16.50	0.75m Above FGL
05	PUMPING HOUSE (ABOVE WET WELL)	1	–	–	5.50	16.50	–
06	VALVE CHAMBER	1	14.00	4.00	3.00	–	–

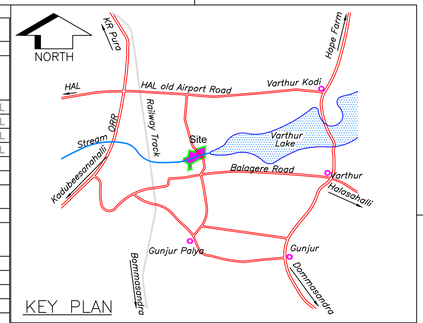
BELLANDUR 60MLD STP COMPONENT LIST

SI NO.	COMPONENT NAME	NO. OF UNITS	SIZE IN METERS				
	SEWAGE TREATMENT PLANT (STP)		L	W	LD*/H	DIA	Free board (m)
07	STP INLET CHAMBER	1	1.70	10.80	1.80	–	0.50
08	FINE SCREENS AND CHANNEL	4	7.00	1.80	1.10	–	0.50
09	FINE SCREEN EFFLUENT CHANNEL	1	1.50	10.80	1.00	–	0.50
10	GRIT CHAMBER	4	–	–	1.50	3.80	0.50
11	PARSHALL FLUME CHANNEL	1	25.00	2.20	1.00	–	0.50
12	PRIMARY CLARIFIER FLOW DISTRIBUTION BOX	1	6.00	3.00	1.80	–	0.50
13	PRIMARY CLARIFIER WITH PLATE SETTLERS	4	15.00	15.00	4.30	–	0.50
14	PRIMARY SLUDGE PUMP HOUSE	1	15.00	10.00	5.50	–	–
15	AERATION BASIN FLOW DISTRIBUTION BOX	1	6.00	3.00	1.80	–	0.50
16	AERATION BASIN (ANAEROBIC ZONE)	4	9.80	16.00	6.00	–	0.60
17	AERATION BASIN (ANOXIC ZONE)	4	29.40	16.00	6.00	–	0.60
18	AERATION BASIN (AEROBIC ZONE)	4	62.00	16.00	6.00	–	0.60
19	DE-AERATION ZONE	4	12.30	4.50	5.70	–	0.60
20	AERATION BASIN EFFLUENT CHANNEL	1.00	–	2.40	1.20	–	0.50
21	SECONDARY CLARIFIER DISTRIBUTION STRUCTURE	1.00	3.00	8.40	1.80	–	0.50
22	SECONDARY CLARIFIER	3.00	–	–	3.70	36.00	0.50
23	SECONDARY PUMP HOUSE	1.00	17.00	10.00	5.50	–	–
24	DISC FILTER FLOW DISTRIBUTION BOX	1	6.00	3.00	1.80	–	0.50
25	DISC FILTER EFFLUENT CHANNEL	1	14.60	2.00	0.90	–	0.50
26	DISC FILTERS	3	8.00	3.00	1.50	–	0.50
27	DISC FILTER BYPASS CHANNEL	1	8.00	2.00	0.90	–	0.50
28	DISC FILTER BUILDING(ABOVE DISC FILTER)	1	8.00	14.60	5.50	–	RCC Framed stilt structure
29	CCT FLOW DISTRIBUTION BOX	1	6.00	3.00	1.80	–	0.50
30	CHLORINE CONTACT TANK	3	30.70	7.40	2.30	–	0.50
31	CCT EFFLUENT CHANNEL	1	23.00	2.00	0.90	–	0.50
32	BLOWER BUILDING(INCLUDING ELECTRICAL PANEL)	1	21.00	13.00	9.00	–	–
33	CHEMICAL BUILDING	1	12.00	11.00	5.50	–	–
34	CHLORINATION BUILDING	1	28.00	15.00	5.50	–	–
35	SLUDGE BALANCING/FLOW DISTRIBUTION BOX TO THICKENER	1	5.00	5.00	2.20	–	0.50
36	GRAVITY SLUDGE THICKENER	2	–	–	4.20	19.00	0.50
37	SLUDGE THICKENED BUILDING	1	15.00	9.00	5.50	–	–
38	ANAEROBIC SLUDGE DIGESTER	2	–	–	10.00	27.50	
39	SLUDGE DIGESTER BUILDING	1	20.00	12.00	6.00	–	G+2
40	BIOGAS HOLDER	2	–	–	8.00	14.00	–
41	BIOGAS SCRUBBING AREA	1	12.00	9.00	–	–	–
42	BIOGAS SCRUBBING BLOWER BUILDING	1	9.00	8.00	7.50	–	–
43	BIOGAS FLARE AREA	1	12.00	6.00	–	–	–
44	CENTRIFUGE FEED SUMP	1	8.00	9.00	3.50	–	Top of sump shall be same as the level of digestor
45	CENTRIFUGE FEED PUMP HOUSE	1	8.00	9.00	5.50	–	–
46	CENTRIFUGE BUILDING(G+1)	1	8.00	9.00	5.50	–	G+1
47A&B	SCUM PIT	2	–	–	2.00	7.00	2.00
48A&B	PLANT DRAIN SUMP	2	–	–	2.00	6.50	2.50
49	TREATED WATER STORAGE	1	9.00	4.00	3.50	–	1.00
50	RO BUILDING	1	10.00	7.00	5.50	–	–
51A&B	TRANSFORMER YARD	2	15.00	7.00	–	–	–
52A&B	ELECTRICAL SUB STATION(TSPS/STP)	2	20.00	18.00	5.50	–	–
53A&B	PLANT DG ROOM	2	15.00	12.00	6.50	–	–
54	BIOGAS ENGINE ROOM	1	15.00	12.00	6.50	–	–
55	STORE/TOOL/MAINTENANCE WORKSHOP	1	15.00	10.00	6.00	–	–
56	ADMIN BUILDING INLUDES PLC SCADA,LABORATORY(G+1)	1	15.00	12.00	4.50	–	–
57	PARKING SHED	1	15.00	6.00	4.50	–	–
58	GUARD ROOM(SECURITY ROOM)	1	3.00	3.00	3.00	–	–
59	OUTFALL CHAMBER	1	5.00	3.00	1.50	–	1m aboveFGL
60	OVERFLOW CHAMBER	3	2.00	2.00	1.50	–	0.50
61	ODOUR CONTROL ROOM(OCU 1) NEAR TSPS	1	8.00	5.00	6.00	–	RCC stilt room
62	OCU 2 (Near Preliminary treatment units)	1	8.00	5.00	6.00	–	RCC stilt room
63	OCU 3 (Near Sludge handling units)	1	8.00	5.00	6.00	–	RCC stilt room
64	RCC BRIDGE-1	1	20.00	5.00	–	–	–
65	RCC BRIDGE-2	1	35.00	5.00	–	–	–
66	RCC RETAINING WALL-1	1	430	–	4.00	–	0.50m above FGL
67	RCC RETAINING WALL-1A	1	60.00	–	4.00	–	0.50m above FGL
68	RCC RETAINING WALL-2	1	790	–	4.00	–	0.50m above FGL

AREA DETAILS

TOTAL AREA= 77298.5613 Sqmt (19.10 Acres)

AREA REQUIRED FOR STP =54743.9889 Sqmt (13.53 Acres)



KEY PLAN

LEGENDS:

- RAW SEWAGE PIPE
- BYPASS LINE
- SLUDGE PIPE
- SCUM PIPE
- SUPERNATANT PIPE
- PROPOSED ROAD
- TREATED WATER
- EXISTING ROAD
- (10) PROPOSED STP UNITS
- PROPOSED PRECAST RCC PRECAST COMPOUND WALL
- PROPOSED PRECAST RCC RETAINING WALL

ASPHALT ROAD, DRAIN.

CONCRETE ROAD, CART TRACK.

BUILDING/SHEDS, FOOTPATH.

COMPOUND WALL , FENCE, LAMP POST.

ORDINARY TREE, BAMBOO TREE, PIPE.

BOUNDARY & POINTS, TRANSFORMER. B1 B2

INVERT LEVEL, CHAMBER INVERT LEVELS. 884.949

BENCH MARKS, TRAVERSE POINTS. SBM9□ M1⊙

NOTES:

1. ALL LEVELS ARE IN METERS,UNLESS OTHER WISE MENTIONED.
2. ALL LEVELS ARE WITH REFERENCE TO THE GTS BENCH MARK ENGRAVED ON CENTER OF 2ND STONES ON EAST SIDE OF QUEEN VICTORIA'S STATUE IN CUBBON PARK,BANGALORE.ITS VALUE IS 912.266M.
3. ALL THE CO-ORDINATES ARE BASED ON UTM WGS-84.
4. ALL THE PROCESS AND NON-PROCESS BUILDING DIMENSIONS SHOWN ARE MINIMUM AND HEIGHT OF THE BUILDING SHALL BE FROM FINISHED FLOOR LEVEL TO BOTTOM OF THE BEAM.
5. FINISHED FLOOR LEVEL OF ALL PROCESS AND NON PROCESS BUILDING SHALL BE ATLEAST 500MM ABOVE THE FINISHED GROUND LEVEL.
6. FINISHED GROUND LEVEL (FGL) OF THE STP SHALL BE MINIMUM 500MM ABOVE THE HFL.
7. ALL THE BUILDING DIMENSIONS (OR AREA WHEN CALCULATED) SHOWN ARE MINIMUM. HOWEVER, CONTRACTOR MAY UPSIZE THESE DIMENSIONS (OR AREA WHEN CALCULATED) BASED ON HIS DESIGN TO MEET THE SPECIFIED TENDER REQUIREMENTS.
8. CONTRACTOR HAS TO PROPOSE A PILE FOUNDATION FOR ALL PROCESS UNITS INCLUDING FOR ALL TYPES OF BUILDINGS AS A PART OF THE FOUNDATION DESIGN OF THIS STP.
9. TOTAL LENGTH OF PROPOSED 5m WIDE ROAD = 2080m
10. TOTAL LENGTH OF PROPOSED RCC PRECAST COMPOUND WALL = 660m

HFL =864.15m

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	SIGN.										
	INITIALS										
	REVISIONS										
	SIGN.										
	INITIALS										
ISSUE		DRN	DSN	CHD	CV	EL	IC	ME	PE/PM	APPD	DATE
					CLEARED						

CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 60 MLD CAPACITY STP AT BELLANDUR

DWG NAME: OVERALL PLANT LAYOUT WITH CONTOUR

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FILE NAME : LAYOUT (60 MLD Bellandur).dwg

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SCALE	DWG NO.	ISSUE
: NTS	TCE.13052A-CV-3008-SL-30602	P0
DC & DISC: BLR-CV		SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

TCE FORM NO. 091 R1

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

DWG NO: TCE.13052A-EL-4001-AU-40061

INCOMERS FROM THE FROM NEAREST KPTCL/BESCOM SUBSTATION

11kV AL. CONDUCTOR, XLPE, ARM. UNDER GROUND CABLE

3 WAY RMU (DAS)
11kV, 630A, 350 MVA
(2 OD + 1VL)
(AS PER BESCOM SPECS.)

11kV, 630A ISOLATOR+ES

11kV, 630A ISOLATOR+ES

11kV, 630A VCB

11kV, AL ARMOURED XLPE CABLE

METERING CUBICLE
11KV, 3 CT & 3 PT
(AS PER BESCOM SPECS.)

TTB TVM

BESCOM'S SCOPE

PROPOSED WORKS UNDER CONTRACTOR'S SCOPE

11KV OUTDOOR VCB PANEL

11kV VCB

11kV, AL ARMOURED XLPE UNEARTHED CABLE

11kV METAL ENCLOSED SWITCHBOARD

LOC: 11kV HT ROOM

PROTECTION VSS+DV R Y B MCB

BUS PT 11kV/110V/110V CL.–0.5 (METERING) CL.–3P (PROTECTION)

Line PT–1 11kV/110V/110V CL.–0.5 (METERING) CL.–3P (PROTECTION)

SA MCB MCB VSS+DV R Y B

PROTECTION CT CL:5P20 R 50,50N,51,51N,27,50BF,95,94 NUMERICAL RELAY PLC

METERING CT CL:1 MFM ASS+DA

11kV VCB INCOMER

86

(ON I/C FEEDER)

BON BOFF T TCH SC DCF RC BS BT ACF

11kV, 3PH, 50HZ, TP, CU BUSBAR, 26.25kA FOR 1SEC

(ON O/G FEEDER)

95 94 86

BON BOFF T TCH SC DCF RC BS BT ACF

PLC

TRANSFORMER ANNUNCIATION (TYP)

MARSHALLING BOX(TYP)

11kV VCB 86 P1 P2 SA

METERING CT CL:1 MFM

PROTECTION CT CL:5P20 R 50/51 50N N.RELAY PLC

50,50N,51,51N,49,24,50BF 94,WTI,OTI,BR,OSR,PRV 51NS,46

11kV, AL ARMOURED XLPE UNEARTHED CABLE

TO ICOG PANEL–1 (AIR BLOWER BLDG.)

TO ICOG PANEL–2 (AIR BLOWER BLDG.)

DG PCC#01 SUB–STATION BUILDING

TR–1, 11kV/433V, ONAN, Z=% AS PER IS:1180, DYN11, OUTDOOR PLINTH MOUNTED WITH WTI, OTI, BR, MOG, OSR PRV WITH TAP CHANGER INDICATION WITH +5% TO –15% TAPS IN STEPS OF 2.5%

TR–2, 11kV/433V, ONAN, Z=% AS PER IS:1180, DYN11, OUTDOOR PLINTH MOUNTED WITH WTI, OTI, BR, MOG, OSR PRV WITH TAP CHANGER INDICATION WITH +5% TO –15% TAPS IN STEPS OF 2.5%

R 51NS

NON – SEGREGATED TPN ALUMINIUM BUSDUCT

415V PCC # 01

LOC: SUB–STATION BUILDING

ON MCCB ON OFF TRIP

ON ACB BON BOFF TCH SC T RC

MCB R Y B

METERING CT CL.–1.0 MFM TO PLC (RS485)

EDO,ACB,TPN WITH MICROPROCESSOR RELEASE FOR O/C, E/F, UV & S/C

INCOMER–1 NC

INCOMER–2 NC

DG INCOMER NO

BUS–1 BUS–2 I/L MCB N0

BUSCOUPLER SAME AS INCOMER

415V, 3PH, 50HZ, TPN, CU BUSBAR 50kA FOR 1SEC

FUSE 415/230V AC TR MCB DP

TPN ACB TPN MCCB

KVAr APFCR

1.1kV XLPE CU/AL ARMOURED CABLE

FOR FEEDERS CONTROL SUPPLY

TSPS MCC

CHLORINATION MCC

BATTERY CHARGER

SPARE

MLDB

EFDB 2 NOS.

BIO–GAS MCC

CAPACITOR BANK WITH APFC

DIGESTER MCC

RAS MCC

CENTRIFUGE MCC

RTCC PANEL 2 NOS.

HEADWORKS MCC

DG ROOM

415V DG SET#03 WITH AMF CONTROL PANEL

415V DG SET#04 WITH AMF CONTROL PANEL

G

1.1kV XLPE AL ARMOURED CABLE

TPN ACB

LEGENDS:–

(K) RELAYING

50	INSTANTANEOUS PHASE OVER CURRENT RELAY SUFFIX. N– GROUND
51	INVERSE DEFINITE MINIMUM TIME OVER CURRENT RELAY SUFFIX N– GROUND, SUFFIX NS–STANDBY EARTH
95	TRIP CIRCUIT SUPERVISION RELAY
94	ANTI–PUMPING RELAY
27	UNDER VOLTAGE RELAY
86	LOCKOUT RELAY (HAND RESET)
OSR	OIL SURGE RELAY
PRV	PRESSURE RELEASE VALVE
50BF	BREAKER FAIL
46	REVERSE PHASE/UNBALANCE
24	VOLTS PER HERTZ RELAY
49	TRANSFORMER THERMAL RELAY
64R	RESTRICTED EARTH FAULT PROTECTION RELAY

3–PH DISTRIBUTION TRANSFORMER
CURRENT TRANSFORMER
POTENTIAL TRANSFORMER
CABLE TERMINATION
415V DRAW OUT TYPE AIR CIRCUIT BREAKER
11KV DRAW OUT TYPE VACUUM CIRCUIT BREAKER
415V MOULDED CASE CIRCUIT BREAKER
415V MINIATURE CIRCUIT BREAKER
BREAKER CONTROL SWITCH
INDICATING LAMP

M MOTOR
STAR–DELTA STARTERS WITH SINGLE PHASE PREVENTOR AND MPR
DIRECT ONLINE STARTERS WITH SINGLE PHASE PREVENTOR AND MPR
(G) DG SET WITH AMF CONTROL PANEL
TCH TRIP CIRCUIT HEALTHY INDICATION (WHITE LED)
SC SPRING CHARGED INDICATION (BLUE LED)
BON BREAKER ON INDICATION (RED LED)
BOFF BREAKER OFF INDICATION (GREEN LED)
T TRIPPED ON FAULT INDICATION (AMBER LED)
DCF DC SUPPLY FAIL INDICATION (AMBER LED)
BS BREAKER IN SERVICE POSITION (RED LED)
BT BREAKER IN TEST POSITION (CLEAR LED)
ACF AC SUPPLY FAIL INDICATION (AMBER LED)
ON ON INDICATION (RED LED)

OFF OFF INDICATION (GREEN LED)
TRIP TRIP INDICATION (AMBER LED)
R R–PHASE INDICATION LAMP (RED LED)
Y Y–PHASE INDICATION LAMP (YELLOW LED)
B B–PHASE INDICATION LAMP (BLUE LED)
L/S LOCAL/OFF/REMOTE SELECTOR SWITCH
SA SURGE ARRESTER
ASS+DA DIGITAL AMMETER WITH BUILT IN SELECTOR SWITCH
VSS+DV DIGITAL VOLTMETER WITH BUILT IN SELECTOR SWITCH
415V, FIXED TYPE MOTOR PROTECTION CIRCUIT BREAKER (MPCB)
ICP INSTRUMENTATION CONTROL PANEL
N.RELAY NUMERICAL RELAY
MFM MULTI FUNCTION METER WITH RS485 COMMUNICATION (AMMETER, VOLTMETER, PF, FREQUENCY)
PLC PROGRAMMABEL LOGIC CONTROLLER

MPR COMPREHENSIVE MOTOR PROTECTION RELAY
M METERING UNIT
CAPACITOR BANK
LCSP LOCAL CONTROL STARTER PANEL
TTB(CT SHORT LINK)
SS SOFT STARTER
SI LOCAL ISOLATOR SWITCH
RC READY TO CLOSE (CLEAR LED)
LCP LOCAL CONTROL PANEL
TR CONTROL TRANSFORMER
I/L INTER LOCK

INTERLOCK:

INCOMER-1	INCOMER-2	BUS COUPLER	DG
ON	ON	OFF	OFF
ON	OFF	ON	OFF
OFF	OFF	ON	ON
OFF	ON	ON	OFF

NOTES:

1. TRIP COIL CIRCUITS OF ALL CIRCUIT BREAKERS SHALL BE PROVIDED WITH TRIP SUPERVISION RELAY TO SUPERVISE THE CIRCUIT IN BOTH OPEN AND CLOSED POSITION OF CIRCUIT BREAKERS.
2. ALL RELAYS USED IN 11kV SWITCHGEAR SHALL BE NUMERICAL TYPE.
3. AMMETERS IN MOTOR FEEDERS SHALL BE PROVIDED WITH SUPPRESSED SCALE UP TO 6 TIMES FULL LOAD CURRENT FOR INDICATION STARTING CURRENT.
4. ACB's SHALL BE PROVIDED WITH MICROPROCESSOR RELEASES FOR ADJUSTABLE OVERLOAD SHORT CIRCUIT, UNDER VOLTAGE AND EARTH FAULT FOR LT BREAKER. VCB'S SHALL BE PROVIDED WITH SHUNT TRIP COILS RATED WITH 110V DC FOR HT BREAKER.
5. MCCB's SHALL BE PROVIDED WITH ELECTRONIC RELEASES FOR ADJUSTABLE OVERLOAD, SHORT CIRCUIT AND EARTH FAULT.
6. ALL PANEL WIRING SHALL BE WITH 1100 VOLTS GRADE PVC INSULATED 1.5 Sqmm STRANDED COPPER WIRE FOR CONTROL WIRING & 2.5 Sqmm FOR CT SECONDARY WIRING.
7. ALL CT'S SHALL BE OF 5A SECONDARY.
8. ALL CONTACTOR/TIMERS etc., SHALL BE RAIL MOUNTED.
9. MINIMUM CONTACTOR RATING SHALL BE 16A.
10. CONTROL SUPPLY SHALL BE 240V AC TAPPED BETWEEN PHASE AND NEUTRAL FEEDERS MODULES.
11. MPCB SHALL BE WITH IN BUILT SINGLE PHASING PREVENTER.
12. ALL CONTACTORS SHALL BE OF AC 3 DUTY.
13. WIDTH OF FEEDER COLOUMN SHALL BE MINI 500 mm CABLE ALLEY SHALL BE 300mm MINI.
14. ALL ACB, MCCB, CONTACTORS, MPCB, & MPR SHALL BE OF TYPE–2 CO–ORDINATION.
15. LCP SHALL BE AS INDICATED IN P&ID.
16. CT RATIO SHALL BE 20% MORE THAN THE FLC 0.85PF & 0.9 EFFICIENCY.
17. CABLE COMPARTMENT SHALL HAVE LED LAMP INTERLOCKED WITH DOOR.
18. ALL INDICATION LAMP SHALL HAVE LED CLUSTER TYPE.
19. ALL MCCB SHALL HAVE EXTENDED ROTORY HANDLE & EXTENDED BUSBAR LINK
20. OPERATION LOGIC OF 415V SWITCHBOARD:

(A) AT NORMAL CONDITION BOTH THE TRANSFORMER INCOMER FEEDER SHALL BE IN CLOSED POSITION. THE BUS COUPLER AND DG INCOMER IN OPEN POSITION.

(B) IN CASE OF FAULTS, THE FAULTY INCOMER FEEDER SHALL BE OPEN POSITON THE BUS COUPLER AND THE HEALTHY INCOMER FEEDER SHALL BE CLOSED POSITON.

(C) IN CASE OF POWER FAILURE, THE DG INCOMER, BUS COUPLER SHALL BE IN CLOSED POSITION. BOTH THE TRANSFORMER INCOMER SHALL BE SWITCHED OFF BY ACTIVATION OF UNDER VOLTAGE RELAY OF THE GRID INCOMER.

21. MOTOR FEEDER <5.5kW WILL HAVE DIRECT CONNECTED AMMETER IN Y PHASE, MOTORS >5.5kW UPTO 15kW WILL BE PROVIDED WITH 1 CT AND AMMETER AND MOTOR >15kW AND ABOVE WILL BE PROVIDED WITH 3 CTS AND AMMETER.
22. NECESSARY INTERLOCK TO SPACE HEATER WITH MOTORS TO BE PROVIDED.
23. ALL MCB SHALL HAVE KW = 100% Ics.
24. ALL MCCB CONNECTED TO MOTOR SHALL BE RATED TO MOTOR DUTY.
25. ALL ACB SHALL HAVE Icu = Ics = Icw.
26. THE 415V SIDE OF THE TRANSFORMER IS PROVIDED WITH NON SEGREGATED ALUMINUM BUS DUCT IF THE TRANSFORMER RATING IS GREATER THAN OR EQUAL TO 1000KVA. FOR THE TRANSFORMER RATING IS LESS THAN 1000KVA XLPE AL ARMOURED CABLE SHALL BE PROVIDED ON 415V SIDE.
27. CABLE SIZES LESS THAN OR EQUAL TO 6 Sqmm SHALL BE PROVIDED WITH COPPER CONDUCTORS AND AL CONDUCTORS TO BE USED FOR CABLE SIZES ABOVE 6 Sqmm.
28. CAPACITOR BANK WITH APFC SHALL BE PROVIDED WITH INTERLOCK SUCH THAT PANELS ARE FED BY DG SET, CAPACITOR BANK SHALL BE DISCONNECTED.
29. 20% SPARE FEEDERS WITH MINI OF 1 SPARE FEEDER FOR EACH RATING OF THE OUTGOING FEEDERS SHALL BE PROVIDED IN LT PANELS (PCC/MCC).
30. PORTABLE TYPE STARTER WILL BE PROVIDED FOR GATES.

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FILE NAME : SLD (60 MLD Bellandur).dwg

CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 60 MLD CAPACITY STP AT BELLANDUR

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE : NTS
DC & DISC: BLR–EL
DWG NO. TCE.13052A–EL–4001–AU–40061
ISSUE PO
SIZE–A1

TCE FORM NO. 091 R1

FILE NAME: F–091–Rev–R1.dwg

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

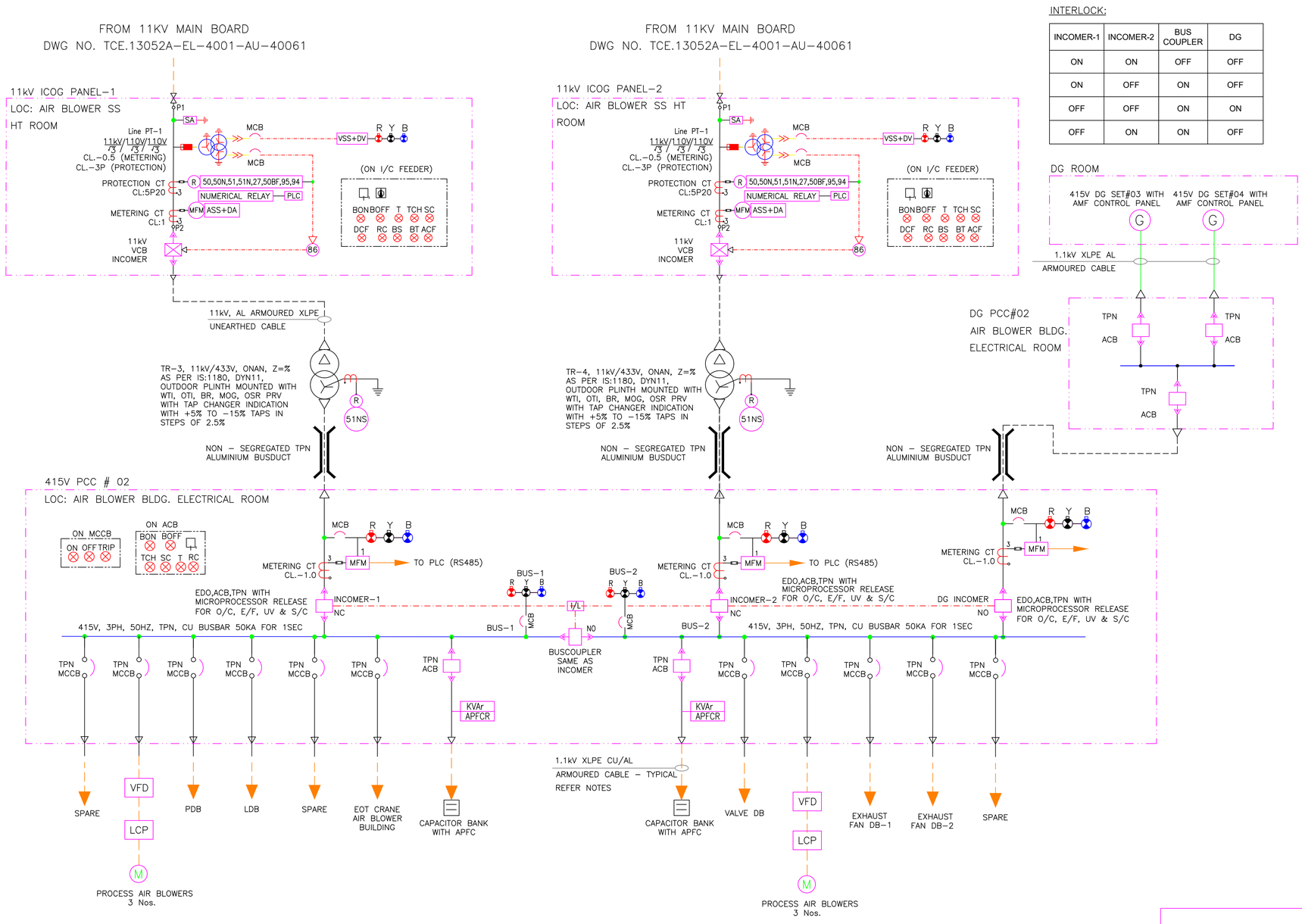
DWG NO TCE.13052A-EL-4001-AU-40062

NOTES:-

1. FOR GENERAL NOTES, LEGENDS, REFER DRAWING NO. TCE.13052A-EL-4001-AU-40061.

INTERLOCK:

INCOMER-1	INCOMER-2	BUS COUPLER	DG
ON	ON	OFF	OFF
ON	OFF	ON	OFF
OFF	OFF	ON	ON
OFF	ON	ON	OFF



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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 60 MLD CAPACITY STP AT BELLANDUR

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE	DWG NO.	ISSUE
: NTS	TCE.13052A-EL-4001-AU-40062	P0
DC & DISC : BLR-EL		

SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

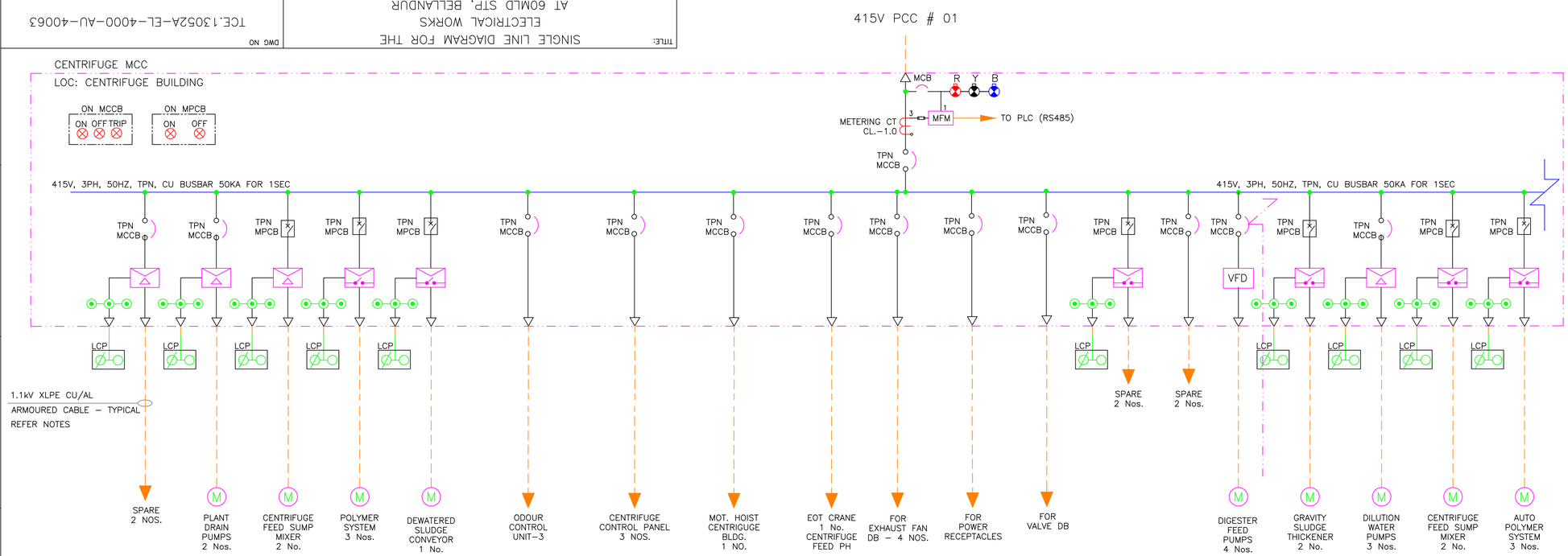
TCE FORM NO. 091 R1

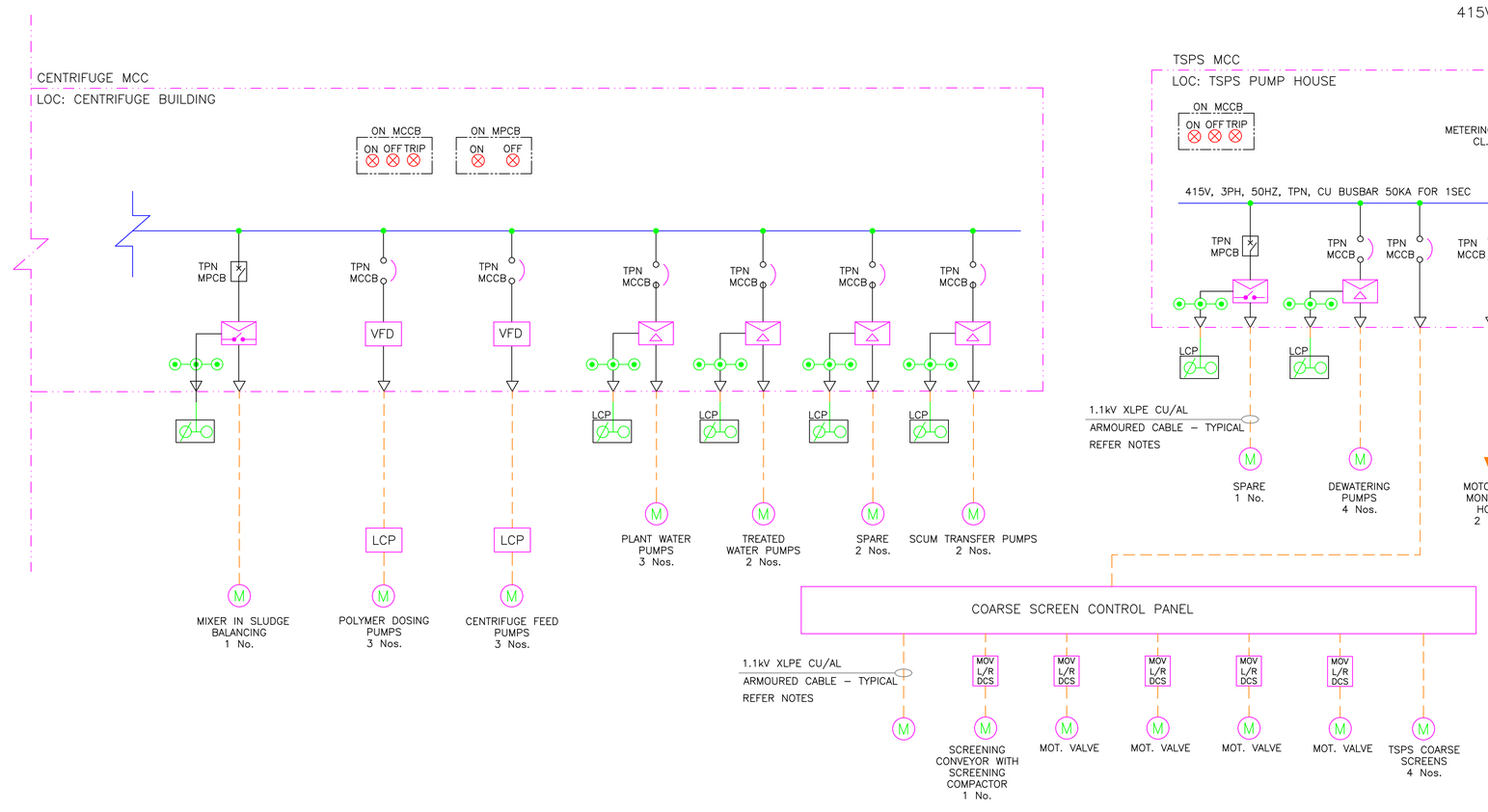
TCE.13052A-EL-4000-AU-40063
DWG NO

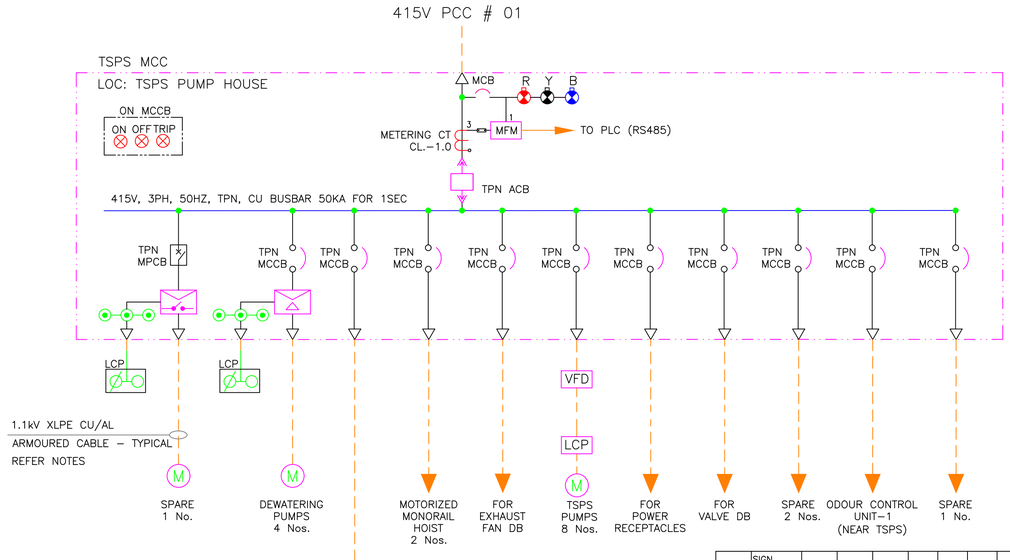
SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR
TITLE:

NOTES:-

1. FOR GENERAL NOTES, LEGENDS, REFER DRAWING NO. TCE.13052A-EL-4001-AU-40061.







COARSE SCREEN CONTROL PANEL
1.1kV XLPE CU/AL ARMOURED CABLE - TYPICAL REFER NOTES
MOV L/R DCS
SCREENING CONVEYOR WITH SCREENING COMPACTOR 1 No.
MOT. VALVE
MOT. VALVE
MOT. VALVE
MOT. VALVE
TSPS COARSE SCREENS 4 Nos.

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CLIENT:
BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME:
60 MLD CAPACITY STP AT BELLANDUR

DWG NAME:
SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE	DWG NO.	ISSUE
: NTS	TCE.13052A-EL-4000-AU-40063	P0
DC & DISC : BLR-EL		

SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

TCE FORM NO. 091 R1

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

DWG NO TCE.13052A-EL-4000-AU-40064

NOTES:-

1. FOR GENERAL NOTES, LEGENDS, REFER DRAWING NO. TCE.13052A-EL-4001-AU-40061.

415V PCC # 01

HEADWORKS MCC

LOC: SUBSTATION BUILDING

ON MCCB: ON OFF TRIP

ON MPCB: ON OFF

MCB R Y B

METERING CT CL.-1.0

MFM → TO PLC (RS485)

TPN MCCB

415V, 3PH, 50HZ, TPN, CU BUSBAR 50KA FOR 1SEC

TPN MCCB	TPN MPCB	TPN MPCB	TPN MPCB	TPN MPCB	TPN MCCB	TPN MPCB	TPN MPCB	TPN MPCB	TPN MPCB	DP MCCB	DP MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MPCB	TPN MCCB	TPN MCCB
LCP	LCP	LCP	LCP	LCP	LCP	LCP	LCP	LCP	LCP							LCP		
FINE SCREEN PANEL	GRIT MECHANISM DRIVE 4 Nos.	GRIT TRANSFER PUMP 4 Nos.	GRIT WASHER MECHANISM 4 Nos.	GRIT DISCHARGE CONVEYOR 4 Nos.	EOT CRANE PRIMARY TREATMENT	PRIMARY SLUDGE PUMPS 6 NOS.	PRIMARY CLARIFIER 4 NOS.	SPARE	SPARE	FOR AIR CONDITIONING IN SCADA, CONTROL ROOM BUILDING 2 Nos.	FOR AIR CONDITIONING IN CONFERENCE HALL, ENGINEERS ROOM 2 Nos.	FOR EXHAUST FAN DB IN SUB-STATION BUILDING	FOR POWER RECEPTACLES	FOR VALVE DB	EOT CRANE (PRIMARY SLUDGE PH)	SPARE 2 Nos.	SPARE 2 Nos.	ODOUR CONTROL UNIT-2 (NEAR HEAD WORKS)

1.1kV XLPE CU/AL ARMOURED CABLE - TYPICAL REFER NOTES

FINE SCREEN CONTROL PANEL

SCREENING CONVEYOR WITH SCREENING COMPACTOR 1 No.	MOV L/R DCS → MOT. VALVE	MOV L/R DCS → MOT. VALVE	MOV L/R DCS → MOT. VALVE	MOV L/R DCS → MOT. VALVE	MOV L/R DCS → MOT. VALVE	FINE SCREENS 4 Nos. - 3 KW

415V PCC # 01

RAS MCC

LOC: SUBSTATION BUILDING

ON MCCB: ON OFF TRIP

ON MPCB: ON OFF

MCB R Y B

METERING CT CL.-1.0

MFM → TO PLC (RS485)

TPN MCCB

415V, 3PH, 50HZ, TPN, CU BUSBAR 50KA FOR 1SEC

TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MCCB	TPN MPCB	TPN MPCB		
VFD	VFD	VFD				LCP	LCP	LCP	LCP	LCP				LCP			
LCP	LCP	LCP															
MLR PUMPS 8 NOS.	RETURN ACTIVATED SLUDGE PUMPS 5 Nos.	EOT FOR SEC. PUMP HOUSE	EOT FOR RETIEVABLE DIFFUSER ARRANGEMENT 4 Nos.	SPARE 2 No.	FOR EXHAUST FAN DB	ANAEROBIC MIXERS 10 NOS.	ANOXIC MIXERS 18 NOS.	DE-AERATION ZONE MIXERS 8 NOS.	SECONDARY CLARIFIERS 3 NOS.	SPARE 2 Nos.	FOR POWER RECEPTACLES	FOR VALVE DB	SPARE 2 NOS.	SPARE 2 Nos.			

1.1kV XLPE CU/AL ARMOURED CABLE - TYPICAL REFER NOTES

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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 60 MLD CAPACITY STP AT BELLANDUR

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

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SCALE : NTS | DWG NO. TCE.13052A-EL-4000-AU-40064 | ISSUE P0 | SIZE-A1

DC & DISC : BLR-EL

FILE NAME: F-091-Rev-R1.dwg

TCE FORM NO. 091 R1

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

DWG NO TCE.13052A-EL-4000-AU-40065

NOTES:-

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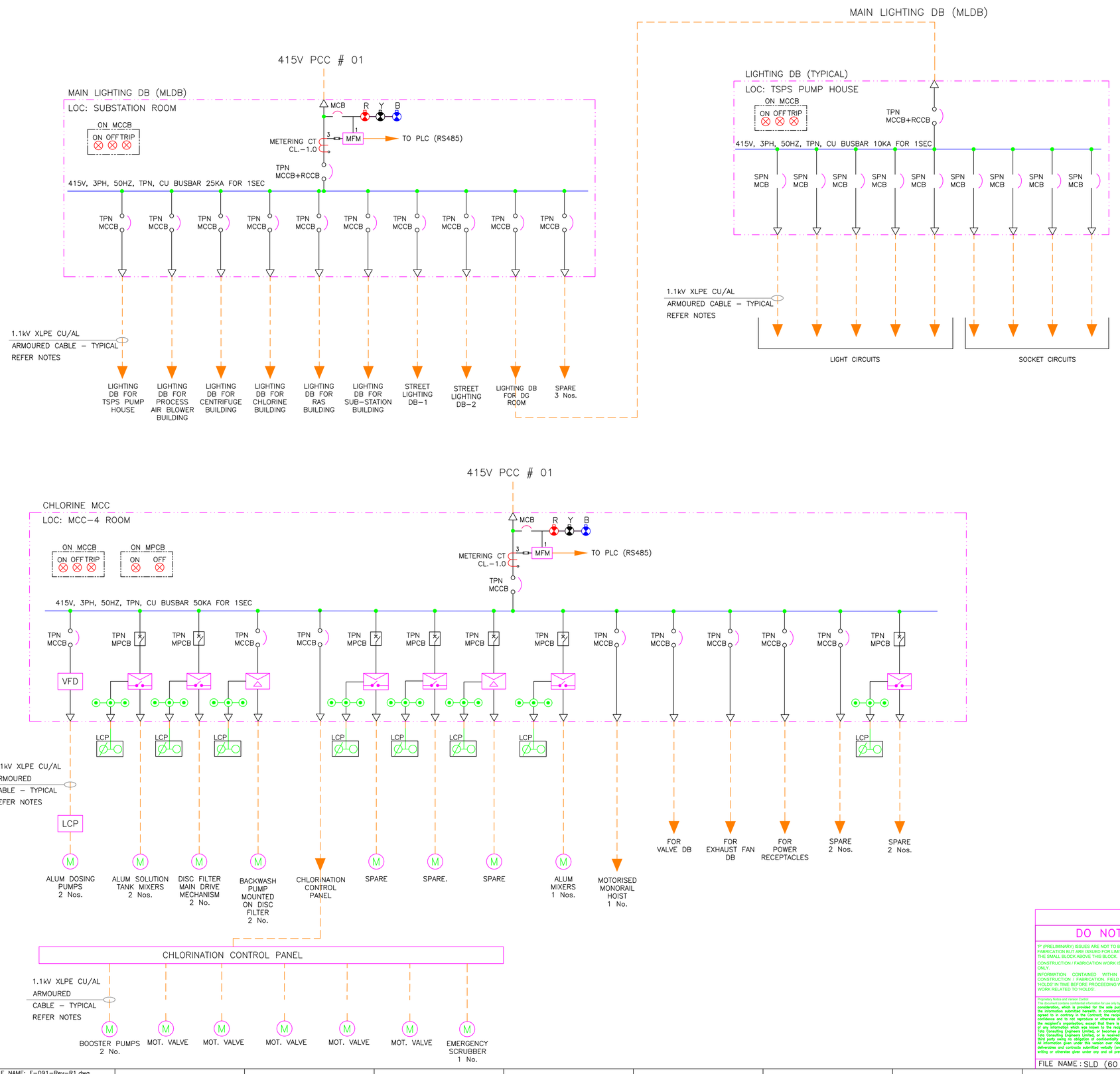

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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 60 MLD CAPACITY STP AT BELLANDUR

DWG NAME: AT 60MLD STP, BELLANDUR
ELECTRICAL WORKS
AT 60MLD STP, BELLANDUR

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE	DWG NO.	ISSUE
: NTS	TCE.13052A-EL-4000-AU-40065	PO
DC & DISC: BLR-EL		

FILE NAME : SLD (60 MLD Bellandur).dwg

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SIZE-A1

TCE FORM NO. 091 R1

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 60MLD STP, BELLANDUR

DWG NO: TCE.13052A-EL-4000-AU-40066

NOTES:-

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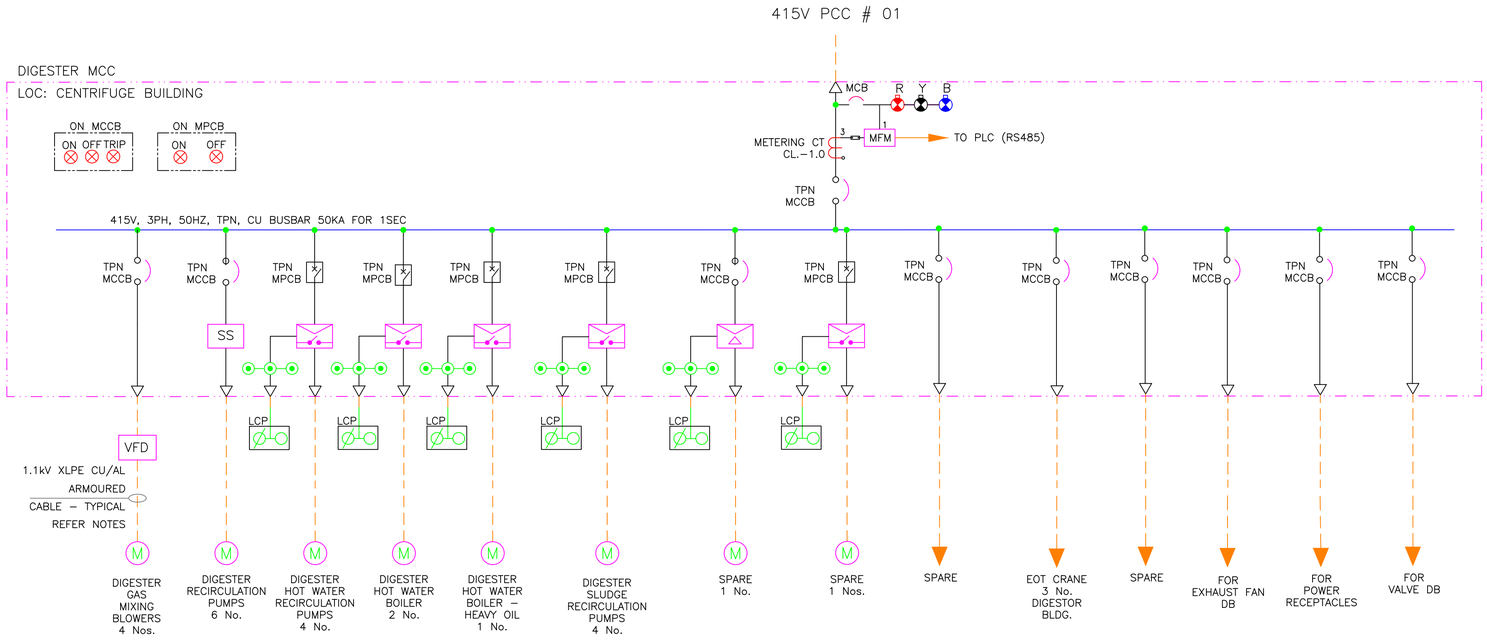

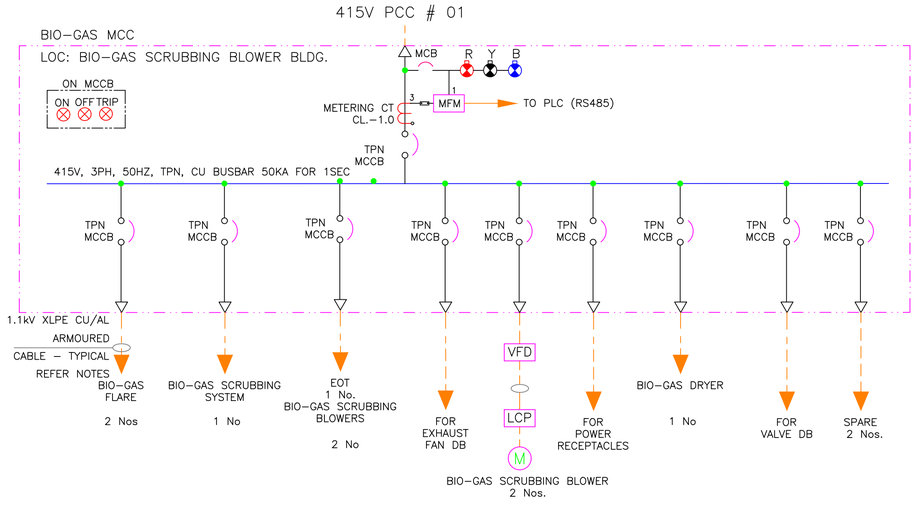

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